

ABSTRACT

A new method of reducing copper hillocks in copper metallization is described. An opening is made through a dielectric layer overlying a substrate on a wafer. A copper layer is formed overlying the dielectric layer and completely filling the opening. The copper layer is polished back to leave the copper layer only within the opening. Copper hillocks are reduced by: coating an oxide layer over the copper layer and the dielectric layer, thereafter heating the wafer using NH_3 plasma, and thereafter depositing a capping layer overlying the oxide layer wherein the time lapse between polishing back the copper layer and depositing the capping layer is less than one day (24 hours).